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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,348	04/29/2004	David D. Needelman	03-0963 (BOE 0465 PA)	3347

27256 7590 02/24/2006

ARTZ & ARTZ, P.C.  
28333 TELEGRAPH RD.  
SUITE 250  
SOUTHFIELD, MI 48034

EXAMINER

BEAULIEU, YONEL

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/709,348

Applicant(s)

NEEDELMAN ET AL.

Examiner

Yonel Beaulieu

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/29/04&amp;6/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 112***

Claims 1 - 28 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is not clear as to whether the "ground station" (line 1) is the same as the one recited at line 4.

Any claims linked to claim 1 is necessarily rejected.

Regarding claim 15, "...a bright object, or a plurality of objects..." (line 4) is not understood. It is not clear as to the 'bright object' is different than the 'plurality of objects.' Also, it is not readily clear whether the determined vehicle inertial attitude (line 16) is the same as the specific vehicle attitude (as established at line 1).

Claims that are dependent upon the claim 15 are necessarily rejected.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 7, 9, 10, 15 – 21, 23, 24, 29 – 32, 34, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Bender et al. (US 5,412,574).

Regarding claims 1, 7, 9, 10, 15, 16, 21, 23, 24, 29, and 30, Bender teaches a method of determining a vehicle attitude or angular velocity, comprising: calculating (using algorithm in processor 14), on-board the vehicle (the vehicle being spacecraft 100; col. 7, lines 16 – 20 at least), a stayout zone associated with a bright object, or a plurality of objects and determining a star in the stayout zone (see figs. 3a and 3b; col. 5, lines 38 – 63 at least); and determining a vehicle inertial attitude or angular velocity, based on star measurements of sensed or tracked stars (tracked by item 12; col. 4, lines 25 – 41 at least), excluding (separating) the star within the stayout zone (col. 4, line 66 – col. 5, line 33); Bender further teaches listing the stars inside the zone (based on star ID) and flagging a star catalog (22; see fig. 2; col. 4, lines 1 – 35 at least). Bender further teaches controlling the vehicle attitude in response to the vehicle inertial attitude or velocity (to place item 100 in orbit inherently requires a minimum angular orbital velocity; note col. 5, lines 5 – 32 at least). Bender further teaches orientation determination of the star trackers (col. 3, lines 57 – 68; col. 5, lines 55 – 63; and col. 6, lines 18 – 22 at least). Moreover, Bender teaches the exclusion of a star being based upon the properties of the star or the object (Bender teaches which star to detect and determines which to track; col. 4, lines 10 – 16 at least).

Regarding claims 2 - 4, 16 - 18, 31, 32, and 34, Bender's teaching further comprises a circular stayout zone (considering orbital path of spacecraft 100 as illustrated in fig. 1a; col. 3, lines 13 - 18 at least) and a non-circular stayout zone (col. 8, lines 23 - 39 at least).

Regarding claims 5, 6, 19, 20, and 14, Bender's exclusion is performed for a fixed and non-fixed period of time (col. 8, lines 40 - 54).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 11 - 14, 22, 25 - 28, 33, and 36 - 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bender et al. (US 5,412,574).

As discussed above, Bender teaches all of the limitations except for the property being brightness having a first and a second magnitude and calculating one circular rectangular, different shape, stayout zone.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention a star is a known self-luminous, self-containing mass of gas

representing twinkling points of light that can be seen at nights with different intensity (magnitude) and that Bender teaches a method/system that performs equally well in order to track a star and determine a vehicle attitude.

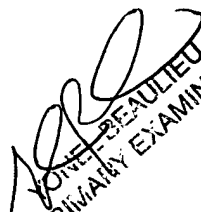
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yonel Beaulieu whose telephone number is (571) 272-6955. The examiner can normally be reached on M-W 9-3; F 9-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas BLACK can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3661

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



YONEL BEAULIEU  
PRIMARY EXAMINER

Yonel Beaulieu  
Primary Examiner  
Art Unit 3661